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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/542,548

07/18/2005

Alexander Zernickel

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OSTROLENK FABER GERB & SOFFEN
1180 AVENUE OF THE AMERICAS
NEW YORK, NY 100368403

EXAMINER

PILKINGTON, JAMES

ART UNIT

PAPER NUMBER

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11/07/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/542,548	Applicant(s) ZERNICKEL ET AL.	
	Examiner JAMES PILKINGTON	Art Unit 3656	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 October 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 3-16 and 19-23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 3-16, 19-23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

1. Claim 20 is objected to because of the following informalities: "further comprising the stem has a circumferential surface" should be - - further comprising a circumferential surface on the stem - - . Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. Claims 13, 14, 19 and 20 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claim 13 recites "the rack having a third side opposite the second contact surface and bearing faces on the third side of the rack." There is no support in the specification for additional bearing faces to those claimed in line 6 of the claims. The Examiner believes the limitation should be written to state - -the rack having a side opposite the second contact surface which includes the two bearing surfaces- -.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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4. Claims 3-6, 8-16 and 19-23, as best understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Adams, USP 6,736,021, in view of Zernick, USP 6,948,401 (published as WO 02/064989 on 8/22/02).

Adams discloses a rack and pinion steering system comprising:

- A pinion (26) having an axis and having a first contact surface around the axis (the gear teeth 32)
- A rack (34) having a longitudinal direction across the axis of the pinion (26) and the rack being mounted to be displaceable along the longitudinal direction thereof
- The rack (34) having a second contact surface (teeth 38) that engages the first contact surface (32)
- The rack (34) having a prismatic form including two bearing faces/longitudinal recesses (50 and 52) which are inclined at an angle to the engagement of the first and second contact surfaces (32 and 38) and being symmetrical with respect to the first contact surface along the axis
- The rack (34) having a third/back side (48, 50 and 52) opposite the second contact surface (38) which includes the bearing faces/longitudinal recess (50 and 52), the back side having an arcuate form (48 is arcuate)
- A pressure piece (56) arranged on the third/back side (48, 50 and 52) of the rack, the pressure piece (56) sliding on the bearing faces (50 and 52) on the third/back side of the rack (34), the pressure pieces (56) being prestressed by a spring (58) in the axial direction against the rack, the

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pressure piece having two bearing faces (opposite 50 and 52) which lie generally opposed to one another and are inclined with respect to one another

- At least one axial sliding bearing member (154 and 156) on each bearing face
- Wherein the pressure piece (56) has a blind hole/through hole (80) for the bearing member (154 and 156)
- Wherein the rack (34) has a longitudinal recess (cutout forming bearing faces 50 and 52)
- Wherein the arcuate form of the back side of the rack is convex (the curve of 48 is convex)

Adams does not disclose that the bearing member is an axial roller bearing comprising to space apart runner plates and a rolling body set situated between the runner plates, one runner plate of each axial roller bearing being held in the pressure piece, the other rotatable runner plate of the bearing extending inclined at an angle with respect to the bearing face, the angle defining a contact point that is less than the entire width of the runner plate, wherein the rotatable runner plate has a spherical cap configuration having a convex spherical cap face in punctiform contact with the bearing face of the rack, wherein the axial roller bearing is a ball bearing or a needle bearing, wherein the fixed runner plate is configured as a sleeve having an edge which engages around the roller plate of the spherical cap forming a retaining element, wherein

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the rotatable runner plate has a mushroom-shaped configuration including a stem and a convex spherical cap face, a sleeve accommodating the stem and a needle ring which surrounds the stem and sleeve has an axially oriented projection.

Zernickel teaches a bearing member that is an axial roller bearing (3) comprising to space apart runner plates (6 and 7 or the equivalent in the additionally disclosed species) and a rolling body set (8) situated between the runner plates (6 and 7), one runner plate (7) of each axial roller bearing being held in the pressure piece (2), the other rotatable runner plate (6) of the bearing extending inclined at an angle with respect to the bearing face (at point contact 10), the angle defining a contact point (10) that is less than the entire width of the runner plate (6), wherein the rotatable runner plate (6) has a spherical cap configuration having a convex spherical cap face in punctiform contact (at 10) with the bearing face, wherein the axial roller bearing is a ball bearing (rollers 8 are balls) or a needle bearing (Figures 4 or 5 character 19), wherein the fixed runner plate (7, 17 or 21) is configured as a sleeve having an edge (end of open side of the plate) which engages around the roller plate of the spherical cap forming a retaining element, wherein the rotatable runner plate (6, see Figure 5) has a mushroom-shaped configuration including a stem (20) and a convex spherical cap face (6), a sleeve (21) accommodating the stem (20) having a circumference and a needle ring (19) which surrounds the stem (20) and the sleeve has an axially oriented projection (23).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to substitute the bearing assembly of Adams with the bearing assembly of Zernickel to achieve the predictable result of providing a bearing assembly which reduces the friction between the rack and the pressure piece.

5. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Adams '021 in view of Zernickel '401 and further in view of Eck, USP 3,433,543.

Adams in view of Zernickel discloses all of the claim limitations as applied above.

Adams in view of Zernickel does not disclose that the needles in the bearing are held in a cage.

Eck teaches a needle bearing having needles (4) held in a cage (3) for the purpose of providing a bearing that can accommodate a small swinging movement of the parts without the occurrence of pitting (C1/L35-58).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Adams in view of Zernickel and provide a cage for supporting the needles in the bearing, as taught by Eck, for the purpose of providing a bearing that can accommodate a small swinging movement of the parts without the occurrence of pitting.

Response to Arguments

6. Applicant's arguments filed 10/07/08 have been fully considered but they are not persuasive.

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7. The Applicant argues that neither Adams nor Zernickel disclose "an axial sliding bearing" as recited in claim 13.

The Applicant further claims structure of the axial sliding bearing being the runner plates as that depicted in the Figures of the instant application. Zernickel discloses bearing arrangements like the structure of the bearings in the instant application which allow for the rack to slide along in a longitudinal direction thus making the assemblies "axial sliding bearings" as broadly defined. Is the Applicant attempting to claim a bearing assembly that uses a resin ring which one of the runner plates slides/rotates on? If so where is this type of "axial sliding bearing" in the drawings? The listing of references provided by the Applicant does not contain a reference character for "an axial sliding bearing".

8. The Applicant argues that Adams does not disclose a back side having an arcuate form.

The Examiner disagrees and directs the Applicant to Figure 1 of Adams where it clearly shows that a back side of the rack, surface 48, is arcuate in form. The Applicant further relies on the disclosure of Adams where it states 50 and 52 are flat surfaces. The claim states that the rack only "has an arcuate form" not that the bottom of the rack is arcuate throughout the longitudinal direction, 48 in Adams is "an arcuate form." Like Applicant's Figure 10 the rack of Adams has bearing surfaces that are flat but the bottom of the rack has an arcuate form.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JAMES PILKINGTON whose telephone number is (571)272-5052. The examiner can normally be reached on Monday-Friday 8:00AM-4:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Ridley can be reached on (571) 272-6917. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/JAMES PILKINGTON/
Examiner, Art Unit 3656
11/4/08

/Richard WL Ridley/
Supervisory Patent Examiner, Art Unit 3656